

25 has features that may be found in original claims 1, 2 and 12. New independent claim 26 has features that may be found in original claims 1, 6 and 12.

The objection to the drawings, specifically that they do not show every feature of the invention, has been addressed by the cancellation of claim 15. Accordingly, applicants respectfully request that this objection be withdrawn.

The objections to the claims have been addressed by the claims amendments contained herein. With respect to the objection to claim 2, specifically that the reflective layer is not formed on the same plane as that of the gate electrode, applicants respectfully disagree, and noted that page 8, lines 12-13 of the specification states that in figure 1, the “gate electrode 22 and a reflective layer 23 are simultaneously formed of the same material”. With respect to the objection to claim 12, applicants respectfully note that page 16, line 23 states that the rough surfaces 100 “are formed on the first transparent insulation substrate”, and it is clear in the claim that the indicated section is in the reflective layer 23. Thus, since the layer 29 of figure 2 is the black matrix 29 (see page 11), then there is a region that meets the claim language, which is felt to be correct as originally submitted. Accordingly, applicants respectfully request that this objection be withdrawn.

The rejection of claims 1, 2, 12 and 15 under 35 U.S.C. §112, second paragraph, has been addressed by the claims amendments contained herein. Accordingly, applicants respectfully request that this objection be withdrawn.

The rejection of claims 1-2, 4-6, 8 and 12 under 35 U.S.C. §103(a) as being unpatentable over Nagata et al (U.S Patent No. 6,118,505, hereinafter referred to as "Nagata") in view of Ukita et al (U.S Patent No. 5,940,154, hereinafter referred to as "Ukita") is hereby traversed and reconsideration thereof is respectfully requested. Applicants respectfully submit that claims 1-2, 4-6, 8 and 12, as amended, are patentably distinct over the cited references, whether taken alone or in any combination.

Independent claim 1, as amended, recites a reflection type liquid crystal display having a pair of substrates disposed opposite to each with a liquid crystal layer between them. There is a plurality of switching elements formed on one surface of at least one of the pair of substrates, and a reflective layer made of the same material as the switching elements, and simultaneously formed during the formation of the switching elements. A transparent pixel electrode is formed on the reflective layer on an insulation layer and is connected to at least one electrode of the switching element. Claims 2, 4-6, 8 and 12 depend directly or indirectly from independent claim 1, and recite further patentable features over the base claim. Dependent claim 2 recites that the switching elements may be a thin film transistor, and the reflective layer is formed of the same material as the gate electrode of the thin film transistor, and on the same plane as the gate electrode. Dependent claim 4 recites that a color filter layer is disposed between the reflective layer and the transparent pixel electrode. Dependent claim 5 recites that a shielding layer is disposed on an area of the switching elements. Dependent claim 6 recites that the thin film transistor has a gate electrode electrically connected to a scanning line, a gate insulation film formed to cover the gate electrode, a semiconductor layer formed on the gate insulation film, a drain electrode electrically connected to a signal line, and a source electrode electrically

connected to the transparent pixel electrode, and the reflective layer is electrically separated from the gate electrode. Dependent claim 8 recites that the reflective layer is formed of aluminum or aluminum alloy. Dependent claim 12 recites that a rough portion is formed in the lower layer of the reflective layer, and the reflective layer is formed to cover the rough portion.

The cited art of Nagata discloses a liquid crystal display device capable of forming a black mask or color filter as the interlayer insulating film without lowering the display quality. Thus, a simpler device may be made having fewer steps and lower cost. The type of transistor shown is what is known in the art as an inverted staggered transistor. As the Examiner so kindly notes in the outstanding Office Action, the cited reference of Nagata does not teach the claimed reflective layer of the present application being formed made of the same material as the gate electrode, and teaches away from having the two layers formed simultaneously. Applicants submit that Nagata teaches away from the above arrangement as being non-functional.

The cited art of Ukita discloses a reflection type liquid crystal display device which has what is known in the art as a staggered type transistor. There is disclosed a reflection plate 2 shown in figure 3 as being located below the pixel electrode 6, but the reflecting layer is not formed at the same time as, nor made of the same material as, the switching elements.

Applicants respectfully submit that there can be no motivation for one of ordinary skill to combine the cited references of Nagata and Ukita, since there is no suggestion that the reflection type system of Ukita having a reflection layer 2, could provide any type of benefit for the

transmission type system of Nagata, which obviously has no reflection layer.

Applicants specifically respectfully submit that the cited reference does not contain at least the combination of features of “... *a reflective layer constituted of a same material as a material constituting said switching element and simultaneously formed during formation of said switching elements; a transparent pixel electrode formed on said reflective layer via an insulation layer and connected to one electrode constituting said switching element ...*”, as set forth in applicant’s independent claim 1, as amended herein. Rather, the suggested combination teaches away from the claimed arrangement, since the addition of a reflection layer to the Nagata reference would arguably result in zero transmission, and thus an inoperative device.

For at least the above discussed reasons, applicants respectfully submits that independent claim 1, and thus claims 2, 4-6, 8, 12, which depend from claim 1, are patentable over the cited references, and respectfully requests that this rejection be withdrawn.

The rejection of claim 9 under 35 U.S.C. §103(a) as being unpatentable over Nagata in view of Ukita, and further in view of Seiki et al (U.S. patent No. 5,811,835, hereinafter referred to as “Seiki”) is hereby traversed and reconsideration thereof is respectfully requested.

Applicants respectfully submit that claim 9 is patentable over the cited references, whether taken alone or in any combination. The Office Action mentions the Park reference, but applicants believe that the cited sections of the prior art are correctly taken from Seiki, and respond herein accordingly.

Dependent claim 9 recites the reflection type liquid crystal display of claim 8, which depends from claim 1, where the aluminum alloy is an alloy of aluminum and neodymium.

The cited art of Nagata and Ukita are discussed above. The additional cited reference of Seiki discloses a liquid crystal display device in which the gate lines signal lines and pixel electrodes formed of two conductive materials. The two materials are disclosed to include aluminum and chromium, tantalum, titanium and tungsten. There is no disclosure in Seiki of any thing similar to “... *a reflective layer constituted of a same material as a material constituting said switching element and simultaneously formed during formation of said switching elements; a transparent pixel electrode formed on said reflective layer via an insulation layer and connected to one electrode constituting said switching element ...*”, as set forth in applicant’s independent claim 1, as amended herein.

Applicants respectfully submit that the cited reference does not contain at least the combination of features of “... *a reflective layer constituted of a same material as a material constituting said switching element and simultaneously formed during formation of said switching elements; a transparent pixel electrode formed on said reflective layer via an insulation layer and connected to one electrode constituting said switching element ...*”, as set forth in applicant’s independent claim 1, as amended herein. As discussed above, the suggested combination of references contains no disclosure relating to the simultaneous formation and identity of material. Therefore, since the cited references, taken alone or in any combination, do not describe or suggest at least the above noted combination of features of the claimed invention,

the cited references can not render independent claim 1 obvious, and therefore dependent claim 9 is felt to also be non obvious.

For at least the above discussed reasons, applicants respectfully submit that independent claim 1, and thus dependent claim 9, which depend from independent claim 1, are patentable over the combination of cited references, and respectfully requests that this rejection be withdrawn.

The rejection of claims 13 and 14 under 35 U.S.C. §103(a) as being unpatentable over Nagata in view of Ukita, and further in view of Kimura et al. (U.S. Patent No. 5,610,741, hereinafter referred to as “Kimura”) is hereby traversed and reconsideration thereof is respectfully requested. Applicants respectfully submit that claims 13 and 14 are patentable over the cited references, whether taken separately or in any combination.

Claim 13 recites a reflection type liquid crystal display according to claim 12, which depends from independent claim 1 where the rough portion is formed of a material which is not deformed in a heating process performed later and which does not contain high density impurities adversely affecting the liquid crystal display. Claim 14 also depends on claim 12, and recites the reflection type liquid crystal display where the rough portion is formed by forming an insulation film and patterning the insulation film.

The cited references of Nagata and Ukita are discussed above. The cited reference of

Kimura discloses a reflection type liquid crystal display device with a reflection portion that has a bumpy surface. The ratio of the surface area of the reflection layer to a smooth reflection layer is from 60% to 100% increased.

There is no disclosure in Kimura of any thing similar to “... *a reflective layer constituted of a same material as a material constituting said switching element and simultaneously formed during formation of said switching elements; a transparent pixel electrode formed on said reflective layer via an insulation layer and connected to one electrode constituting said switching element* ...”, as set forth in applicant’s independent claim 1, as amended herein.

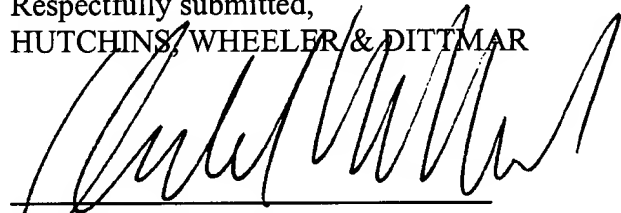
As discussed above, the suggested combination of references contains no disclosure relating to the simultaneous formation and identity of material. Therefore, since the cited references, taken alone or in any combination, do not describe or suggest at least the above noted combination of features of the claimed invention, the cited references can not render independent claim 1 obvious, and therefore dependent claims 13 and 14 are felt to also be non obvious. Therefore, applicants respectfully request that the rejection of claims 13 and 14 be withdrawn.

The rejection of claim 15 under 35 U.S.C. §103(a) as being unpatentable over Nagata in view of Ukita, and further in view of Itoh et al. (U.S. Patent No. 5,841,496, hereinafter referred to as “Itoh”) has been made moot by the cancellation herein of claim 15. Therefore, applicants respectfully request that this rejection of claim 15 be withdrawn.

Applicants respectfully submit that new claims 25 and 26 are patentable over any combination of cited references discussed herein, since both independent claims have the above described features of independent claim 1, which are neither described nor suggested by any combination of the cited references. Therefore applicants respectfully request that new claim 25 and 26 be passed to issue.

Based on the above, applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 617-951-6676.

Respectfully submitted,
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